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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/724,883 | 11/28/2000 | John Edward Tomaschke | 7703-PA02 | 6918 |

27111 7590 07/11/2003

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| EXAMINER |
|---|
| MENON, KRISHNAN S |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1723 | 12 |

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-12

| Advisory Action | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/724,883 | TOMASCHKE, JOHN EDWARD | |
| | Examiner | Art Unit | |
| | Krishnan S Menon | 1723 | |

*--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

THE REPLY FILED 23 June 2003 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2. ☐ The proposed amendment(s) will not be entered because:

   (a) ☐ they raise new issues that would require further consideration and/or search (see NOTE below);

   (b) ☐ they raise the issue of new matter (see Note below);

   (c) ☐ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

   (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____.

3. ☐ Applicant's reply has overcome the following rejection(s): _____.

4. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5. ☒ The a)☒ affidavit, b)☐ exhibit, or c)☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: *see the attachment*.

6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7. ☒ For purposes of Appeal, the proposed amendment(s) a)☐ will not be entered or b)☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

   The status of the claim(s) is (or will be) as follows:

   Claim(s) allowed: _____.

   Claim(s) objected to: _____.

   Claim(s) rejected: *15-21,23,25 and 26*.

   Claim(s) withdrawn from consideration: _____.

8. ☐ The proposed drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9. ☐ Note the attached Information Disclosure Statement(s)( PTO-1449) Paper No(s). _____.

10. ☐ Other: _____

*Response to Arguments*

Applicant's arguments filed 6/23/03 have been fully considered but they are not persuasive.

Claim 23 as amended for correcting the dependency is entered. However, its rejection in the final action under 35 USC 103 as being unpatentable over Chau '291 in view of Koo '278 is sustained.

Applicant argues that the examiner acknowledges that Chau ref does not disclose a sulfonic acid for the formation of a reverse osmosis membrane. It appears that the applicant may have misread the rejection. Sulfonic acid is referenced numerous times throughout the reference.

Applicant's argument that Chau uses acid wash only for the purpose of extracting sodium salts from the membrane: First of all, it is not relevant why Chau does the acid-treatment in a 102(b) rejection; all that matters for the claim is that Chau does an acid-treatment and thus meets the limitations of the claim. Secondly, this argument is purely conjuncture on the applicant's part – the quoted paragraph of the reference does not teach that acid-treatment is for removing salts.

Re the argument that there is no compound called 'sulfonic acid': The reference uses sulfonic acid as a generic term for a class of acids, and specific examples suggested are m-and p-toluene sulfonic acid. Sulfonic acids are also claimed in claim 1.

Re argument about the Koo reference: This reference was used only for giving examples of sulfonic acids used in RO membrane formation, and where one skilled in the art would look for, for specific examples of 'sulfonic acids'.

Re argument as to why 'combination of Chau and Koo references' fail, and that one skilled in the art 'would not consider using Koo's acids in Chau's formulation because Chau does not use any acids in that process (first half of 4th para of page 5 the response): No inference can be seen in Chau to the effect. On the contrary, independent claims 1 and 28, col 6 line 58- col 7 line 21 and all

the working examples teach use of acids in the process. In the second half of the same paragraph, the applicant concedes obviousness of Chau in view of Koo with the statement "As to the consideration that Koo's acid could be used in Chau's washing step, that is redundant, since Chau already teaches for that purpose many of the same acids, including sulfonic acids, that Koo teaches."

Re argument about the Koo reference that it does not teach any acid as active ingredient, but rather teaches only amine salts as reactants: Once again, Koo reference is secondary to show examples of sulfonic acids particularly, C1-C6 acids and MSA. However, it may be noted that Koo reference adds the acid and the amine compound, not the *amine salt* to the process. The claims are open, and do not limit the process to addition of acids alone.

Re the affidavit, see the following paragraphs.

***Response to 132 Affidavit***

The declaration/affidavit under 37 CFR 1.132 filed 6/23/03 is insufficient to overcome the rejection of claims based upon 35 USC 103 (a) over Chau (291) in view of Koo (278) as set forth in the last Office action because:

1. The experiment conducted and the results are not commensurate in scope with the claims. Claims recite 500 ppm of salt solution at 75 psi and have no limitation on the drying conditions. Tests are conducted with 2000 ppm salt solution. The drying conditions are different (90 deg C vs. 170 deg C). The experiments are conducted on membranes made by post-treating ESPA reverse osmosis membrane as substrate and are not directly compared to test results of Chau membrane.

2. Applicant contents from the experimental results that the meta and para toluene sulfonic acids produce results far inferior to the applicant's invention. However, the working example of Chau'291 ref (example 5, col 10 line 17) gives a flux of 38.6 gfd and salt rejection of 98.2% for 2000

ppm of salt at 220 psig. The flux when pressure corrected for 75 psig would be 13.2 Gfd, and would be greater than 15 gfd for the salt concentration of 500 ppm as recited in instant claim 15 (2000 ppm salt solution would have about 4 times the osmotic pressure as that of 500 ppm salt solution, which would create a significant flux loss).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 703-305-5999. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Krishnan Menon
Patent Examiner
July 8, 2003

W. L. WALKER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Inventor: **Tomaschke** Application Number: **09/724,883** Date: **11/28/2000**

| Cl. # | Dep. on | Limitation | Koo, 5/2000 US 6,063,278 | Cadotte, 8/88 US 4,756,897 | |
|---|---|---|---|---|---|
| 1 | | Method of production: Lo press mmb for RO and nano comprising 1st mmb cross linked polyamide | | | |
| | | Organic sulfonic acid | | | |
| | | Time/temp sufficient for lo press mmb | | | |
| | | 15 gfd water flux | | | |
| | | NaCl rej 20% | | | |
| | | RO at 75 psi &25C at 0.05% NaCl aqueous | | | |
| 2 | 1 | Polyamide comprises aromatic di or tri amine and aromatic triacyl halide | | | |
| 3 | 2 | Comprises aro di **or** triamine, aro di **and** triacyl halide | | | |
| 4 | 1 | 1st mmb comprises thin film composite, flat sheet hollow fiber or tubular | | | |
| 5 | 4 | Further comprises 1st mmb in device before contacting with sulfonic acid | | | |
| 6 | 4 | 1st mmb in to device after contacting with sulfonic acid | | | |
| 7 | 1 | Sulfonic acid comprises{...} | | | |
| 8 | 1 | Sulfonic acid = c1-c6 alkyl, alkenyl, halo or aryl.. | | | |
| 9 | 8 | MSA or TMSA | | | |
| 10 | 7 | Sulfonic further comprises c1-c8 carboxilic, OH, alkoxy, or halo functional grp or combination | | | |
| 11 | 1 | Sulfonic acid in water, alcohol, alkoxy alcohol, or carboxylic acid, or mix | | | |
| 12 | 1 | NaCl 80%, 5 gfd when tested with 0.05% NaCl at 150 psi, 25C | | | |
| 13 | 1 | Membrane: 15 gfd, 20% NaCl | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | rej, at 75 psi, 25C and 0,05% NaCl | | | |
| 14 | 1 | Mmb: NaCl at0.05%: 80% R, 5gfd, 25C-150psi | **Koo** | **Cadotte** | |
| 15 | -- | Membrane: comprising Supporting porous structure | 3(65-68 | 2(65-66) | |
| | | Cross-linked polyamide top layer | Do | 1(50-60) | |
| | | Contact with organic sulfonic acid | 6(1-8) | | |
| | | 15 gfd, 20% NaCl rej, 1t 75 psi, 25C and 0.05% NaCl | Table I, ex 12, 13 | | |
| 16 | 15 | Polyamide comprises aromatic di or tri amine and aromatic triacyl halide | 5(10-65) | 3(16-43) | |
| 17 | 16 | Comprises aro di **or** triamine, aro di **and** triacyl halide | Do | Do | |
| 18 | 15 | Porous support polyarylethersulfone | 4(39-46) | Obvious 3(3-10) | |
| 19 | 15 | 1st mmb comprises thin film composite, flat sheet hollow fiber or tubular | Ex 1 | 3(55-65) | |
| 20 | 15 | Spiral wound or plate and frame | -- | 3(55-65) | |
| 21 | 15 | Sulfonic acid comprises{...} | 6 (1-8) | 4(20-23) sulfuric acid | |
| 22 | 15 | Sulfonic acid = c1-c6 alkyl, alkenyl, halo or aryl.. | Do | -- | |
| 23 | 22 | MSA or TMSA | Do | -- | |
| 24 | 21 | Sulfonic further comprises c1-c8 carboxilic, OH, alkoxy, or halo functional grp or combination | Do | -- | |
| 25 | 15 | Sulfonic acid in water, alcohol, alkoxy alcohol, or carboxylic acid, or mix | Do | -- | |
| 26 | 15 | NaCl 80%, 5 gfd when tested with 0.05% NaCl at 150 psi, 25C | Ex 12,13 | 5(5-23) no NaCl | |